

Representative meteorological data continue to be gathered adjacent to the Site from the National Wind Technology Center (NWTC) M2 tower, located approximately 1.5 miles northwest of the COU. The NWTC M2 tower data are queried by Site staff as needed.

3.3 Ecological Monitoring

3.3.1 Introduction

The Ecology Group conducts ecological monitoring of the Site's ecological resources to ensure regulatory compliance and to preserve, protect, and manage those resources. Ecological monitoring is an integral aspect of determining whether the management objectives and goals for the natural resources at the Site are being achieved. This report summarizes the results of the ecological monitoring that was conducted at the Site during 2008. It does not include monitoring conducted for Preble's meadow jumping mouse mitigation and wetland mitigation activities. Those data are summarized in separate regulatory reports provided to the appropriate agencies.

At an elevation of approximately 6,000 feet, the Site contains a unique ecotonal mixture of mountain and prairie plant species resulting from the topography of the area and its proximity to the mountain front. The POU, the area surrounding the COU (the general area where the former IA was once located), is one of the largest remaining undeveloped tracts of its kind along the Colorado Piedmont. A number of plant communities present in the COU and POU have been identified as increasingly rare and unique by the Colorado Natural Heritage Program (CNHP 1994, 1995). These communities include the xeric tallgrass prairie, tall upland shrubland, wetlands, and Great Plains riparian woodland communities. Small inclusions of a number of other increasingly rare plant communities are also found on the Site. Many of these communities support populations of increasingly rare animals as well, including the federally protected Preble's meadow jumping mouse, and other uncommon species such as the grasshopper sparrow, loggerhead shrike, Merriam's shrew, black crowned night heron, hops blue butterfly, and Arogos skipper.

During 2007, transfer of the POU was made to USFWS to create the Rocky Flats National Wildlife Refuge. As a result, the total acreage managed by LM is now approximately 1,308 acres in the COU. A summary of the highlights from the 2008 field season is provided in the following sections. Full, detailed summaries, methodology, and analyses for each field monitoring effort are presented as stand-alone reports on the accompanying Ecology DVD.

3.3.2 Vegetation Monitoring

Vegetation monitoring reported here is conducted at the Site to provide information necessary for management of the natural resources. Objectives of the vegetation monitoring in 2008 were to:

- Identify any new plant species records for the Site;
- Identify and document infestations of select noxious weeds at the Site to assist with planning of noxious weed control applications;
- Document and track the locations where herbicide applications were conducted in 2008;
- Document where revegetation activities were conducted in 2008;

- Evaluate the success of revegetation activities at the Site;
- Conduct photomonitoring for visual documentation of changes in vegetation establishment at the Site; and
- Monitor and document locations of prairie dog activities at the Site.

3.3.2.1 Site Flora

The complete list of plant species known to occur at the Site as of the end of 2008 is found on the Ecology DVD. The Site species list includes the complete flora of both the COU and POU. As a result of the 2008 fieldwork, one new record of vascular plant species for the Site flora is reported. Palmer's penstemon was found southeast of the former raw water pond along the west access road in an area that was revegetated during Site closure. The species is often used in revegetation seed mixes and is a native to southwestern United States. Although not native to the Front Range of Colorado, it is not expected to be a problem; however, the area will be observed to see if the plants begin to establish and spread. The following taxonomic name will be used at the Site for the new plant species record²⁷:

| Family | Scientific Name | Speccode | Common Name |
|------------------|-------------------------------------|----------|--------------------|
| Scrophulariaceae | <i>Penstemon palmeri</i> A. Gray | PEPA1 | Palmer's penstemon |

Voucher specimens of the species will be deposited at the University of Colorado Herbarium in Boulder, Colorado.

3.3.2.2 Weed Mapping and Weed Control

Resource management is an important concern at the Site with a goal to protect and sustain the native ecological resources that make the Site so unique along the Front Range. One of the challenges at the Site is to manage the ecological resources with a limited set of management tools. Currently most efforts focus on the control or eradication of the weed species themselves with little emphasis on trying to improve conditions for the desired native species. Two of the key tools for grassland management, fire and grazing, are not currently allowed at the Site. As a result, management of the ecological resources in the COU is largely limited to controlling the noxious weeds themselves. The Comprehensive Conservation Plan (USFWS 2005), developed by USFWS for management of the Rocky Flats National Wildlife Refuge, has identified the full range of Integrated Pest Management tools for use at the Refuge for controlling weeds. This includes administrative, cultural, biological (including grazing), mechanical (including prescribed fire), and chemical as viable tools for controlling noxious weeds and ecosystem management. Thus there may be a greater opportunity for some of these other resource management tools to be used in the future.

The methods used for weed mapping are provided in the full report on the Ecology DVD at the end of this report.

The 2008 weed distribution maps for diffuse knapweed and dalmatian toadflax are shown in Figure 3–208 and Figure 3–209, respectively. Table 3–97 shows the estimated total acreage and

²⁷ Plant nomenclature follows that of GPFA (1986) and Weber (1976, 1990) in that order of determination, when feasible. The USDA PLANTS Database (USDA NRCS 2009) is used if a species cannot be found in the listed references. Species were verified at the University of Colorado Herbarium in Boulder, Colorado (COLO).

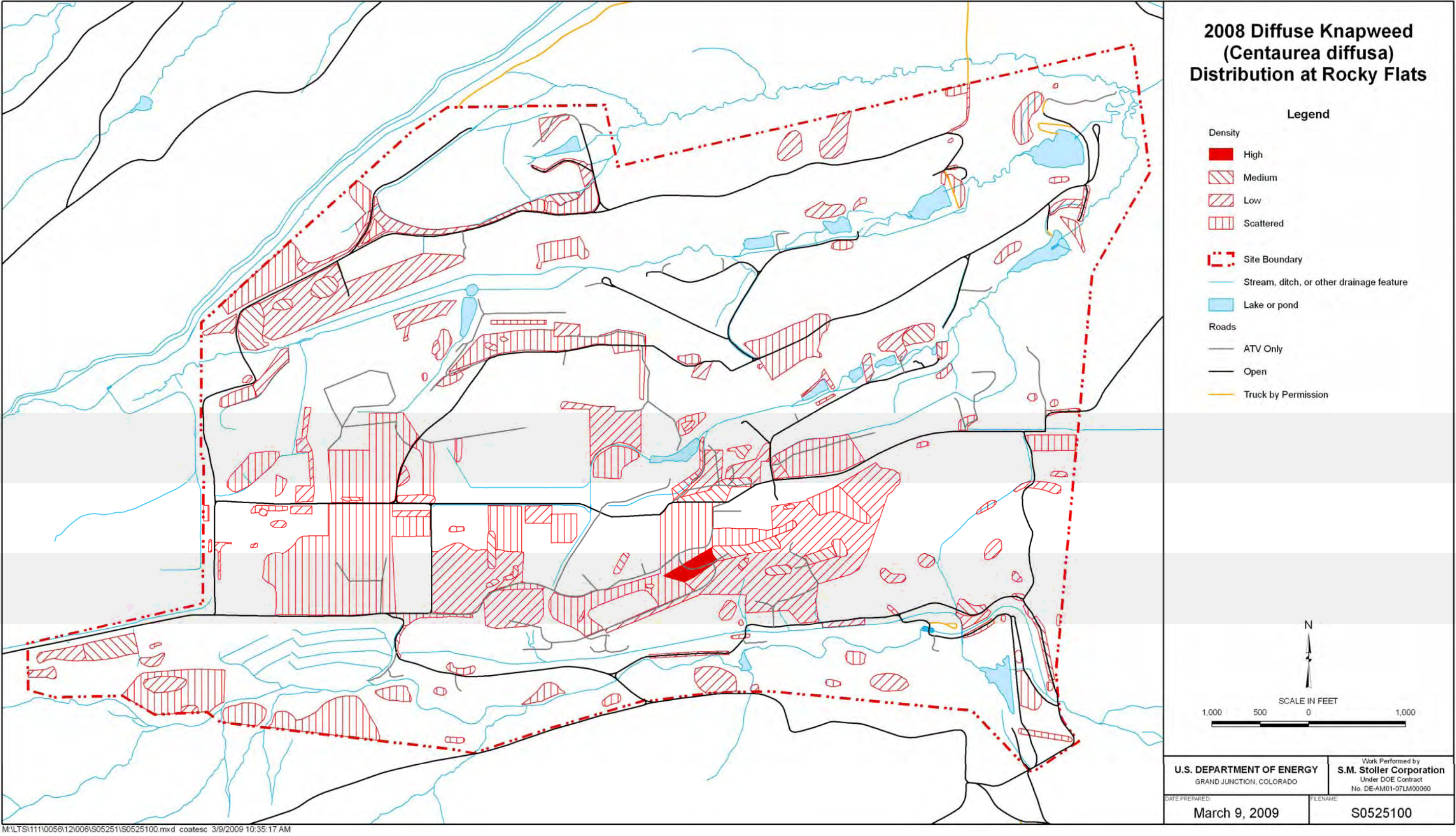


Figure 3-208. 2008 Diffuse Knapweed (*Centaurea diffusa*) Distribution at Rocky Flats

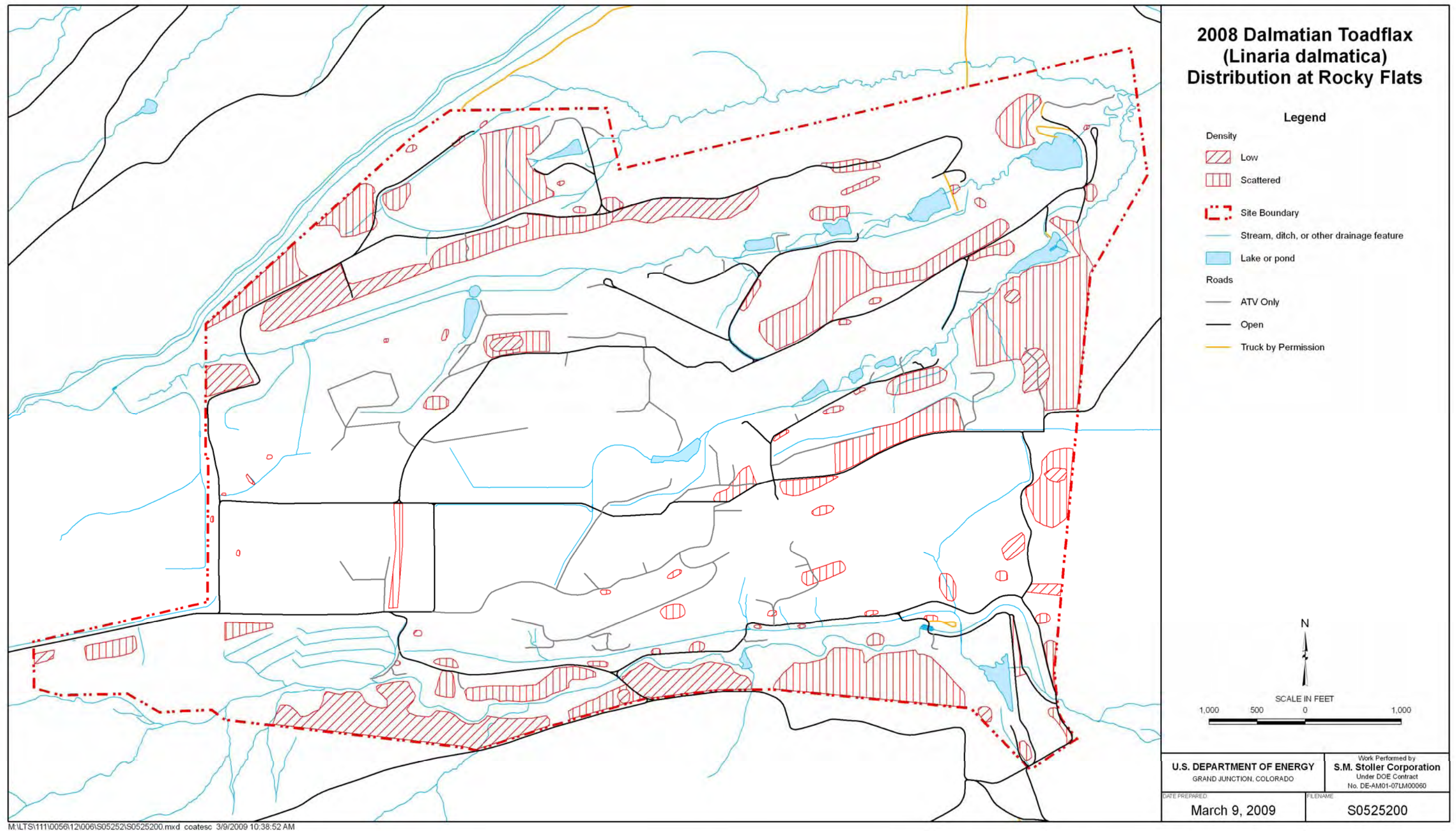


Figure 3-209. 2008 Dalmation Toadflax (*Linaria dalmatica*) Distribution at Rocky Flats

Table 3–97. COU Noxious Weed Acreage Summary

| | Density (acres) | | | | |
|--------------------|-----------------|--------|-------|-----------|-------|
| Species | High | Medium | Low | Scattered | Total |
| Diffuse knapweed | | | | | |
| 2007 | 2.2 | 41.2 | 248.8 | 167.7 | 459.9 |
| 2008 | 1.8 | 20.6 | 110.0 | 147.5 | 279.9 |
| Dalmatian toadflax | | | | | |
| 2007 | 77.1 | 51.0 | 0.0 | 109.0 | 237.1 |
| 2008 | 0 | 0 | 54.3 | 151.8 | 206.1 |

acreage-by-density categories for each species, based on the 2007 and 2008 mapping data. The acreage values are only approximate. In 2008, diffuse knapweed was observed on approximately 280 acres at various levels of infestation. The total area of the COU is approximately 1,308 acres. Dalmatian toadflax was mapped on approximately 206 acres at the Site in 2008. Both species showed a decline in acreage compared to the 2007 mapping data. Some of this is likely due to the below-normal precipitation in 2008. Diffuse knapweed reductions are also probably due to spraying efforts that were directed at this species in 2008.

Additional species that were mapped based on fortuitous observations in 2008 included Scotch thistle, Dame’s rocket, leafy spurge, tall mustard, whitetop, and jointed goatgrass. Figure 3–210 shows the locations of these species as mapped in 2008.

During 2008, approximately 321 acres in the COU were treated with herbicides using ground applications. Figure 3–211 shows the location and herbicides applied at each location in 2008. Table 3–98 lists the target species, herbicides and application rates applied at each location, and the approximate timing of the application during the year. (Note: At several locations multiple herbicides are listed for a location. This does not mean that each herbicide was used across that entire location. Rather, depending on Site-specific characteristics such as target weed species, the locations of water bodies, soil types, and the professional judgment of the licensed herbicide applicator, different herbicides were used within that location to provide the control needed.)

This page intentionally left blank

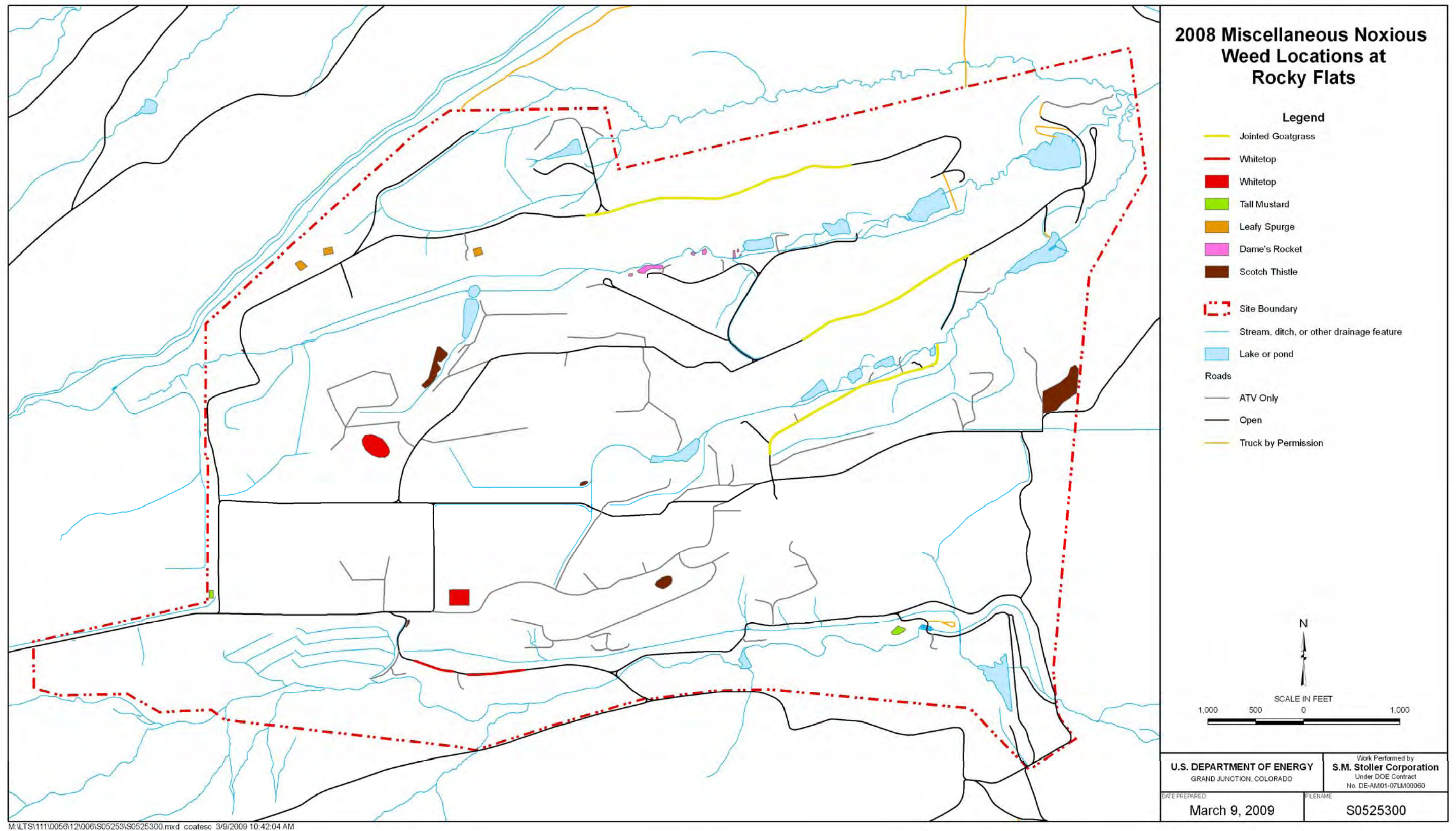


Figure 3-210. 2008 Miscellaneous Noxious Weed Locations at Rocky Flats

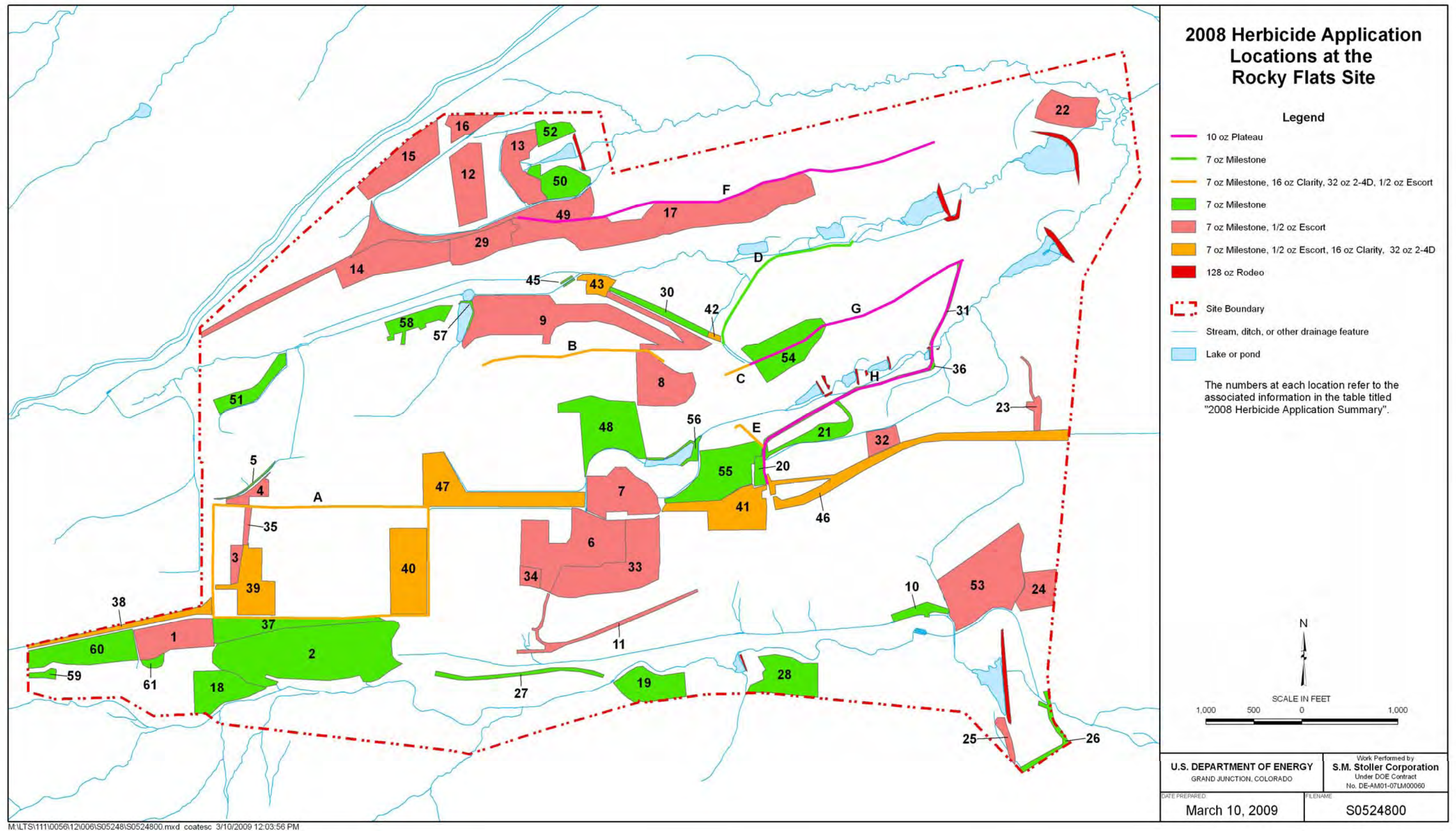


Figure 3-211. 2008 Herbicide Application Locations at the Rocky Flats Site

Table 3–98. FY 2008 Herbicide Application Summary

| Location | Type of Area | Target Species ^a | Treatment ^b | Actual Acreage Treated | Time of Year Treated |
|----------|--------------|-----------------------------|----------------------------------------------------------|------------------------|----------------------|
| 1 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 5.8 | Spring08 Phase I |
| 2 | Polygon | CED11 | 7 oz Milestone | 27.3 | Spring08 Phase I |
| 3 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 1.3 | Spring08 Phase I |
| 4 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 1.3 | Spring08 Phase I |
| 5 | Polygon | CED11 | 7 oz Milestone | 0.3 | Spring08 Phase I |
| 6 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 12.5 | Spring08 Phase I |
| 7 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 7.0 | Spring08 Phase I |
| 8 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 6.5 | Spring08 Phase I |
| 9 | Polygon | CED11, CIAR1 | 7 oz Milestone, 1/2 oz Escort | 19.5 | Spring08 Phase I |
| 10 | Polygon | CED11 | 7 oz Milestone | 1.3 | Spring08 Phase I |
| 11 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 2.5 | Spring08 Phase I |
| 12 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 6.0 | Spring08 Phase I |
| 13 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 5.0 | Spring08 Phase I |
| 14 | Polygon | CED11, VETH1 | 7 oz Milestone, 1/2 oz Escort | 10.5 | Spring08 Phase I |
| 15 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 6.5 | Spring08 Phase I |
| 16 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 2.0 | Spring08 Phase I |
| 17 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 22.0 | Spring08 Phase I |
| 18 | Polygon | CED11 | 7 oz Milestone | 5.0 | Spring08 Phase I |
| 19 | Polygon | CED11 | 7 oz Milestone | 4.5 | Spring08 Phase I |
| 20 | Polygon | CED11 | 7 oz Milestone | 0.7 | Spring08 Phase I |
| 21 | Polygon | CED11 | 7 oz Milestone | 2.5 | Spring08 Phase I |
| 22 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 4.5 | Spring08 Phase I |
| 23 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 1.0 | Spring08 Phase I |
| 24 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 3.5 | Spring08 Phase I |
| 25 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 1.0 | Spring08 Phase I |
| 26 | Polygon | CED11 | 7 oz Milestone | 1.3 | Spring08 Phase I |
| 27 | Polygon | CED11 | 7 oz Milestone | 1.5 | Spring08 Phase I |
| 28 | Polygon | CED11 | 7 oz Milestone | 5.5 | Spring08 Phase I |
| 29 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 5.0 | Spring08 Phase I |
| 30 | Polygon | CED11 | 7 oz Milestone | 1.8 | Spring08 Phase I |
| 31 | Polygon | CED11, CIAR1 | 7 oz Milestone | 0.5 | Spring08 Phase I |
| 32 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 2.0 | Spring08 Phase I |
| 33 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 11.0 | Spring08 Phase I |
| 34 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 1.0 | Spring08 Phase I |
| 35 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort | 0.5 | Spring08 Phase I |
| 36 | Polygon | CED11, CIAR1 | 7 oz Milestone | 2.0 | Spring08 Phase II |
| 37 | Polygon | CED11 | 7 oz Milestone | 5.0 | Spring08 Phase II |
| 38 | Polygon | CED11, KOSC1, LASE1 | 7 oz Milestone, 1/2 oz Escort, 16 oz Clarity, 32 oz 2-4D | 2.5 | Spring08 Phase II |
| 39 | Polygon | CED11, KOSC1, LASE1 | 7 oz Milestone, 1/2 oz Escort, 16 oz Clarity, 32 oz 2-4D | 5.3 | Spring08 Phase II |
| 40 | Polygon | CED11, KOSC1, LASE1 | 7 oz Milestone, 1/2 oz Escort, 16 oz Clarity, 32 oz 2-4D | 7.8 | Spring08 Phase II |
| 41 | Polygon | CED11, KOSC1 | 7 oz Milestone, 1/2 oz Escort, 16 oz Clarity, 32 oz 2-4D | 7.3 | Spring08 Phase II |
| 42 | Polygon | CED11 | 7 oz Milestone, 1/2 oz Escort, 16 oz Clarity, 32 oz 2-4D | 0.3 | Spring08 Phase II |

Table 3–98 (continued). FY 2008 Herbicide Application Summary

| Location | Type of Area | Target Species ^a | Treatment ^b | Actual Acreage Treated | Time of Year Treated |
|-------------------------------|--------------|-----------------------------|----------------------------------------------------------|------------------------|----------------------|
| 43 | Polygon | CEDI1, CIAR1, KOSC1 | 7 oz Milestone, 1/2 oz Escort, 16 oz Clarity, 32 oz 2-4D | 1.3 | Spring08 Phase II |
| 44 | Polygon | CEDI1, CIAR1 | 7 oz Milestone | 0.1 | Spring08 Phase II |
| 45 | Polygon | CEDI1, CIAR1 | 7 oz Milestone | 0.1 | Spring08 Phase II |
| 46 | Polygon | CEDI1, KOSC1, LASE1 | 7 oz Milestone, 1/2 oz Escort, 16 oz Clarity, 32 oz 2-4D | 8.0 | Spring08 Phase II |
| 47 | Polygon | KOSC1, CEDI1 | 7 oz Milestone, 1/2 oz Escort, 16 oz Clarity, 32 oz 2-4D | 9.0 | Spring08 Phase II |
| 49 | Polygon | CEDI1, VETH1, CIAR1 | 7 oz Milestone, 1/2 oz Escort | 7.5 | Fall08 Phase I |
| 50 | Polygon | CEDI1, CIAR1 | 7 oz Milestone | 3.5 | Fall08 Phase I |
| 51 | Polygon | CEDI1, CIAR1 | 7 oz Milestone | 3.0 | Fall08 Phase I |
| 52 | Polygon | CEDI1, CIAR1 | 7 oz Milestone | 1.8 | Fall08 Phase I |
| 53 | Polygon | CEDI1 | 7 oz Milestone, 1/2 oz Escort | 15.0 | Fall08 Phase I |
| 54 | Polygon | CEDI1 | 7 oz Milestone | 6.5 | Fall08 Phase I |
| 55 | Polygon | CEDI1, CIAR1 | 7 oz Milestone | 8.0 | Fall08 Phase I |
| 56 | Polygon | CEDI1, CIAR1 | 7 oz Milestone | 0.7 | Fall08 Phase I |
| 57 | Polygon | CIAR1, CEDI1 | 7 oz Milestone | 0.4 | Fall08 Phase I |
| 48 | Polygon | CEDI1, CIAR1 | 7 oz Milestone | 9.0 | Fall08 Phase I |
| 58 | Polygon | CEDI1 | 7 oz Milestone | 3.3 | Fall08 Phase I |
| 59 | Polygon | CEDI1 | 7 oz Milestone | 1.0 | Fall08 Phase I |
| 60 | Polygon | CEDI1 | 7 oz Milestone | 6.5 | Fall08 Phase I |
| 61 | Polygon | CEDI1 | 7 oz Milestone | 0.5 | Fall08 Phase I |
| A | Road | CEDI1, KOSC1 | 7 oz Milestone, 16 oz Clarity, 32 oz 2-4D, 1/2 oz Escort | 4.5 | Spring08 Phase II |
| B | Road | CEDI1, KOSC1 | 7 oz Milestone, 16 oz Clarity, 32 oz 2-4D, 1/2 oz Escort | 2.0 | Spring08 Phase II |
| C | Road | CEDI1, KOSC1 | 7 oz Milestone, 16 oz Clarity, 32 oz 2-4D, 1/2 oz Escort | 0.5 | Spring08 Phase II |
| D | Road | CEDI1, KOSC1 | 7 oz Milestone | 1.4 | Spring08 Phase II |
| E | Road | CEDI1, KOSC1 | 7 oz Milestone, 16 oz Clarity, 32 oz 2-4D, 1/2 oz Escort | 0.5 | Spring08 Phase II |
| F | Road | AECY1 | 10 oz Plateau | 3.5 | Fall08 Phase I |
| G | Road | AECY1 | 10 oz Plateau | 1.7 | Fall08 Phase I |
| H | Road | AECY1 | 10 oz Plateau | 2.5 | Fall08 Phase I |
| Total Acreage Treated in 2008 | | | | 321.4 | |

^aSpecies Codes: AECY1 = Jointed Goatgrass, CEDI1 = Diffuse knapweed, CIAR1 = Canada thistle, KOSC1 = Kochia, LASE1 = Wild Lettuce, VETH1 = Mullein

^bEach herbicide listed was not sprayed across the entire area. The first herbicide listed was the primary herbicide used across the entire area. The additional herbicides were used at select locations within each area to target specific species.

The herbicide Milestone (active ingredient is aminopyralid) was used to treat several areas at the Site in 2008. This herbicide first became available on the market in 2006. Its advantages include a low application rate, a low environmental impact, and high effectiveness on many target species at the Site. The fact that it can be sprayed to the water's edge also makes it a good tool for controlling Canada thistle and other weedy species that are often present at the edges of ponds and wetlands. Previously, near water these species have been difficult or impossible to control with other methods. Milestone also seems to have at least a 2-year residual effect on preventing the establishment of target species such as diffuse knapweed at the Site. Other herbicides listed are often mixed with the Milestone to control additional species that are not controlled by Milestone.

In 2007, a small patch of leafy spurge, a state-listed noxious weed, was documented for the first time at the Site. This patch was sprayed in 2007 to control its spread. In 2008, two additional small patches of leafy spurge were found in the northern COU. Because these new patches of leafy spurge had already started going to seed when they were discovered, the seedheads were cut off, bagged, and sent to the landfill for burial. All three leafy spurge areas will be evaluated in 2009 and sprayed as needed. Hand control and weed whacking were also used to control some small patches of Scotch thistle, tall mustard, and whitetop in 2008.

The use of biocontrol insects continues at the Site. Approximately 200 stem mining beetles (*Mecinus janthinus*) were released to help control dalmatian toadflax in the COU in spring 2008. At other locations at the Site these beetles have helped to reduce the abundance of the toadflax. Additional biocontrols for different species may be released as they become available. Collections from established populations at the Site may be made and moved to other infestations at the Site where control is needed, as feasible. The integrated weed management approach to controlling noxious weeds at the Site continues to address noxious weed issues through mapping and the use of various control methods.

3.3.2.3 Revegetation Activities in 2008

During 2008, one location where an earlier revegetation effort had not been successful was redone (Figure 3–212). Before Site closure this location had been a road and parking area. Part of the area had been disturbed in 2007 during the 991 slump repair project. Poor soil and substrate conditions had limited vegetation establishment. Compost, Sustane fertilizer, and mycorrhizal inoculant were added as soil amendments. The total area of the revegetation project was approximately 3 acres (Table 3–99). At other locations where vegetation was establishing but still somewhat sparse, interseeding was done to help increase the vegetation cover. Approximately 109 acres were interseeded by hand or using an ATV-mounted broadcast seeder in 2008 (Figure 3–212, Table 3–99). In addition, Sustane fertilizer, a slow-release fertilizer, was applied to approximately 30 acres to assist in revegetation efforts (Figure 3–213, Table 3–100). Photos from the photomonitoring conducted at these locations in 2008 are on the Ecology DVD.

In general, the vegetation in the COU is doing well. The lack of precipitation early in the growing season in 2008 hindered some establishment of the cool-season grasses, but late summer rains helped germinate and start the establishment of warm-season species. Monitoring information from the revegetation areas is presented below.

3.3.2.4 Revegetation Monitoring

As part of the cleanup and closure of the Site, the buildings, roads, and other infrastructure in the IA were removed. Approximately 650 acres were disturbed during cleanup activities, which were completed in fall 2005. Revegetation of the disturbed areas was conducted to prevent erosion and sedimentation of the Site streams and to meet water-quality standards. Reestablishment of native plant species is also desirable to benefit wildlife and provide desirable vegetation and ground cover adjacent to the Rocky Flats National Wildlife Refuge. As part of the revegetation process, monitoring is conducted to determine whether success criteria, as stated in the *Rocky Flats, Colorado, Site Revegetation Plan* (Revegetation Plan; DOE 2009c) are being met as well as to determine whether management of these revegetation areas is needed.

This page intentionally left blank

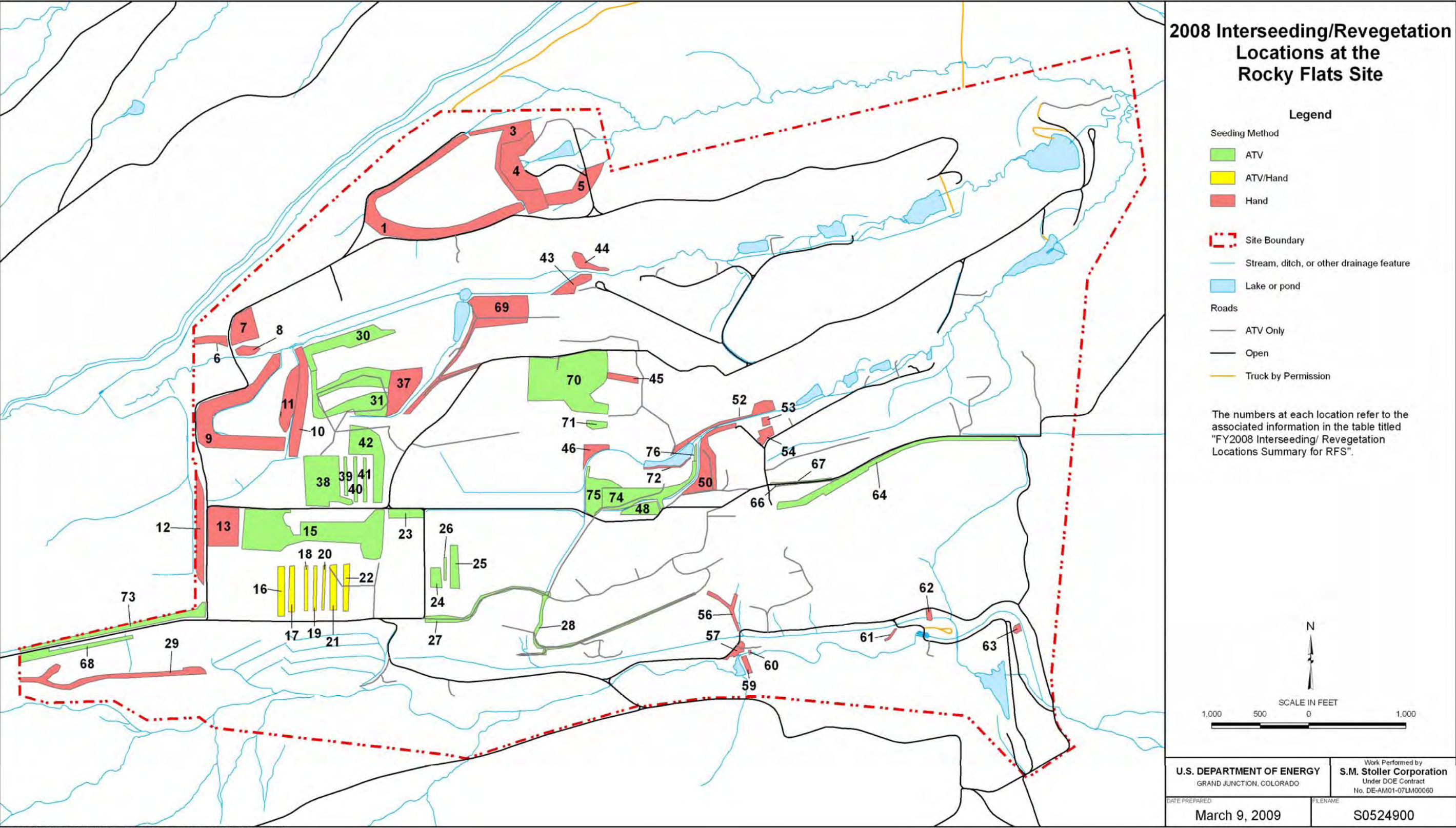


Figure 3-212. 2008 Interseeding/Revegetation Locations at the Rocky Flats Site

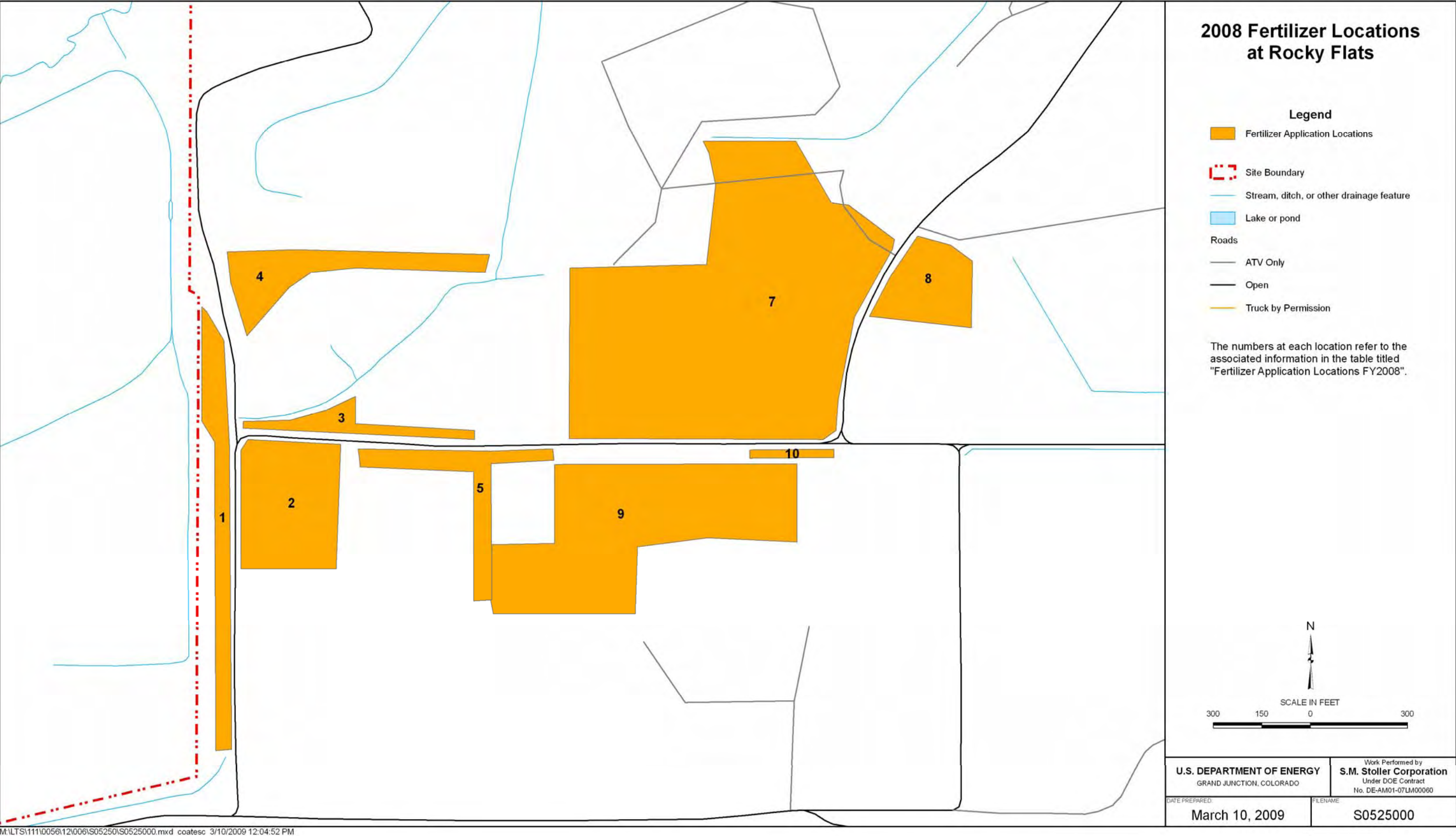


Figure 3-213. 2008 Fertilizer Locations at Rocky Flats

Table 3–99. FY 2008 Interseeding/Revegetation Locations Summary for the Rocky Flats Site

| Location | Acres | Seed Mix | Seeding Method | Date Seeded | Comments |
|----------|-------|--------------|----------------|-------------|----------|
| 1 | 6.6 | Flat | Hand | 1/21-22/08 | |
| 3 | 3.5 | Flat | Hand | 1/31-2/4 | |
| 4 | 3.3 | Hillslope | Hand | 2/21-22/08 | |
| 5 | 2.3 | Hillslope | Hand | 2/18/08 | |
| 6 | 0.6 | Flat | Hand | 3/12/08 | |
| 7 | 1.8 | Flat | Hand | 3/12/08 | |
| 8 | 0.4 | Hillslope | Hand | 3/12/08 | |
| 9 | 6.6 | Hillslope | Hand | 1/24-25/08 | |
| 10 | 2.6 | Hillslope | Hand | 3/12-13/08 | |
| 11 | 1.8 | Wetland/Flat | Hand | 2/08 | |
| 12 | 1.8 | Flat | Hand | 1/23/08 | |
| 13 | 2.9 | Flat | Hand | 1/24-30-08 | |
| 15 | 9.9 | Flat | ATV | 2/27/08 | |
| 16 | 0.8 | Flat | ATV/Hand | 1/27-28/08 | |
| 17 | 0.7 | Flat | ATV/Hand | 1/27-28/08 | |
| 18 | 0.4 | Flat | ATV/Hand | 1/27-28/08 | |
| 19 | 0.4 | Flat | ATV/Hand | 1/27-28/08 | |
| 20 | 0.3 | Flat | ATV/Hand | 1/27-28/08 | |
| 21 | 0.8 | Flat | ATV/Hand | 1/27-28/08 | |
| 22 | 0.6 | Flat | ATV/Hand | 1/27-28/08 | |
| 23 | 0.8 | Flat | ATV | 3/11/08 | |
| 24 | 0.5 | Flat | ATV | 3/25/08 | |
| 25 | 0.9 | Flat | ATV | 3/25/08 | |
| 26 | 0.1 | Flat | ATV | 3/25/08 | |
| 27 | 1.3 | Flat | ATV | 3/25/08 | |
| 28 | 1.7 | Hillslope | ATV | 3/25/08 | |
| 29 | 2.6 | Hillslope | Hand | 1/30/08 | |
| 30 | 2.8 | Hillslope | ATV | 3/26/08 | |
| 31 | 5.7 | Flat | ATV | 3/26/08 | |
| 37 | 2.7 | Hillslope | Hand | 1/31-2/25 | |
| 38 | 4.3 | Flat | ATV | 3/11/08 | |
| 39 | 0.3 | Flat | ATV | 3/11/08 | |
| 40 | 0.3 | Flat | ATV | 3/11/08 | |
| 41 | 0.4 | Flat | ATV | 3/11/08 | |
| 42 | 3.2 | Flat | ATV | 3/25/08 | |
| 43 | 0.9 | Hillslope | Hand | 1/23/08 | |
| 44 | 0.6 | Hillslope | Hand | 1/23/08 | |
| 45 | 0.5 | Flat | Hand | 1/30/08 | |
| 46 | 0.6 | Hillslope | Hand | 2/22/08 | |
| 48 | 0.9 | Flat | ATV | 3/11/08 | |
| 50 | 2.6 | Hillslope | Hand | 1/22/05 | |
| 52 | 1.2 | Hillslope | Hand | 3/10/08 | |
| 53 | 0.1 | Hillslope | Hand | 3/10/08 | |
| 54 | 0.4 | Hillslope | Hand | 3/10/08 | |
| 56 | 0.5 | Hillslope | Hand | 1/24/08 | |

Table 3–99 (continued). FY 2008 Interseeding/Revegetation Locations Summary for the Rocky Flats Site

| Location | Acres | Seed Mix | Seeding Method | Date Seeded | Comments |
|-------------|-------|-----------|----------------|-------------|----------------------------------------------------------------------------------|
| 57 | 0.3 | Hillslope | Hand | 3/4/08 | |
| 59 | 0.2 | Hillslope | Hand | 3/4/08 | |
| 60 | 0.0 | Hillslope | Hand | 3/4/08 | |
| 61 | 0.1 | Hillslope | Hand | 3/4/08 | |
| 62 | 0.2 | Hillslope | Hand | 3/4/08 | |
| 63 | 0.1 | Hillslope | Hand | 3/4/08 | |
| 64 | 3.3 | Flat | ATV | 4/29/08 | |
| 66 | 0.1 | Flat | ATV | 4/29/08 | |
| 67 | 0.2 | Flat | ATV | 4/29/08 | |
| 68 | 1.5 | Flat | ATV | 4/21/08 | |
| 69 | 5.5 | Hillslope | Hand | 4/2/08 | |
| 70 | 9.4 | Flat | ATV | 5/12/08 | |
| 71 | 0.3 | Flat | ATV | 5/12/08 | |
| 72 | 0.2 | Wetland | Hand | 3/10/08 | |
| 73 | 2.2 | Flat | ATV | 4/2/08 | |
| 74 | 3.2 | Flat | ATV | 8/29/08 | Completely redone - added compost, Sustane fertilizer, and mycorrhizal inoculant |
| 75 | 1.8 | Flat | ATV | 3/11/08 | |
| 76 | 0.1 | Flat | ATV | 3/11/08 | |
| Total Acres | 112.6 | | | | |

Table 3–100. Fertilizer Application Locations FY 2008

| Location | Fertilizer | Application Method | Acres | Date Applied |
|-------------|------------|--------------------|-------|--------------|
| 1 | Sustane | ATV spreader | 1.7 | 7/20/2008 |
| 2 | Sustane | ATV spreader | 2.7 | 9/16/2008 |
| 3 | Sustane | ATV spreader | 0.7 | 7/2/2008 |
| 4 | Sustane | ATV spreader | 1.6 | 7/2/2008 |
| 5 | Sustane | ATV spreader | 1.2 | 9/16/2008 |
| 7 | Sustane | ATV spreader | 14.4 | 6/24/2008 |
| 8 | Sustane | ATV spreader | 1.4 | 6/24/2008 |
| 9 | Sustane | ATV spreader | 6.4 | 9/16/2008 |
| 10 | Sustane | ATV spreader | 0.2 | 9/16/2008 |
| Total Acres | | | 30.2 | |

The success criteria from the Revegetation Plan are:

- The revegetation site will have a minimum of 30 percent relative foliar cover of live desired species (seeded or nonseeded native species). Relative cover is defined as the percentage of cover of a given species divided by the total amount of vegetation cover present. Example: Species A has 20 percent absolute cover, and total vegetation cover (all individual species cover values summed) is 80 percent.
Relative cover = $(20/80) \times 100 = 25\%$.

- The revegetation site will have a minimum of 70 percent total ground cover that comprises litter cover, current year live vegetation basal cover, and rock cover.
- A minimum of 50 percent of the seeded native species will be present at the revegetation site.
- No single species will contribute more than 45 percent of the relative foliar cover (except in areas where dominance by a single species is appropriate for long-term wildlife and habitat management objectives).

This report summarizes the revegetation monitoring results for data collected during 2008. The objective of the revegetation monitoring in 2008 was to assess the success of the revegetation efforts. The methods and the large data summary tables are not presented here, but may be found in the full report on the Ecology DVD at the end of this report. Figure 3–214 shows the locations at the Site where revegetation monitoring was conducted in 2008.

Species richness in 2008 at the revegetation locations ranged from a low of 9 species to 45 species. The wide range in the number of species present in each revegetation location is attributable to a number of factors, including how long ago the area was revegetated, the size of the location, the number of quadrats sampled in the location, the degree of disturbance in the area prior to revegetation, and the management actions (e.g., weed control) that have been conducted in the area. Fifteen different seeded graminoid species have established and are growing at some or all locations in 2008. These included western wheatgrass (*Agropyron smithii*), slender wheatgrass (*Agropyron caninum* = *Agropyron trachycaulum*), thickspike wheatgrass (*Agropyron dasystachyum*), Griffith's wheatgrass (*Agropyron griffithsii* = *A. lanceolatus*), Canada wildrye (*Elymus canadensis*), junegrass (*Koeleria pyramidata*), green needle grass (*Stipa viridula*), big bluestem (*Andropogon gerardii*), little bluestem (*Andropogon scoparius*), side-oats grama (*Bouteloua curtipendula*), blue grama (*Bouteloua gracilis*), buffalo grass (*Buchloe dactyloides*), switchgrass (*Panicum virgatum*), Indian grass (*Sorghastrum nutans*), and sand dropseed (*Sporobolus cryptandrus*). Only western wheatgrass was established at all 56 locations. As would be expected in a revegetation project, many other early successional species were growing at many of the areas. Kochia (*Kochia scoparia*), yellow sweet clover (*Melilotus officinalis*), wild lettuce (*Lactuca serriola*), alyssum (*Alyssum minus*), and Russian thistle (*Salsola iberica*) were among the more abundant species. These will largely disappear on their own over the next couple of years as the seeded species begin to fill in more. Several noxious weeds also occurred in the revegetation areas. The most common of these were diffuse knapweed (*Centaurea diffusa*), downy brome (*Bromus tectorum*), and filaree (*Erodium cicutarium*). Weed management will continue to be conducted as needed to keep noxious weed populations down in the revegetation areas and enable the desired seeded species to establish more quickly and compete successfully with the weeds.

Slightly different seed mixes were used at the revegetation locations depending on the year they were seeded and the slope position. One of the success criteria in the Revegetation Plan states that at least 50 percent of the seeded species must be present in an area for it to be considered successful. Thirty-eight locations (68 percent) had 50 percent or more seeded species present in 2008 and have thus met this success criterion (Table 3–101). Many of the locations that failed the percent of seeded species presence criterion recently had the revegetation replanted with soil amendments added. These locations are therefore quite new, and more time is needed for the various seeded species to establish. For the other locations that did not meet this criterion in 2008, other factors may explain why many of the seeded species have not established

This page intentionally left blank

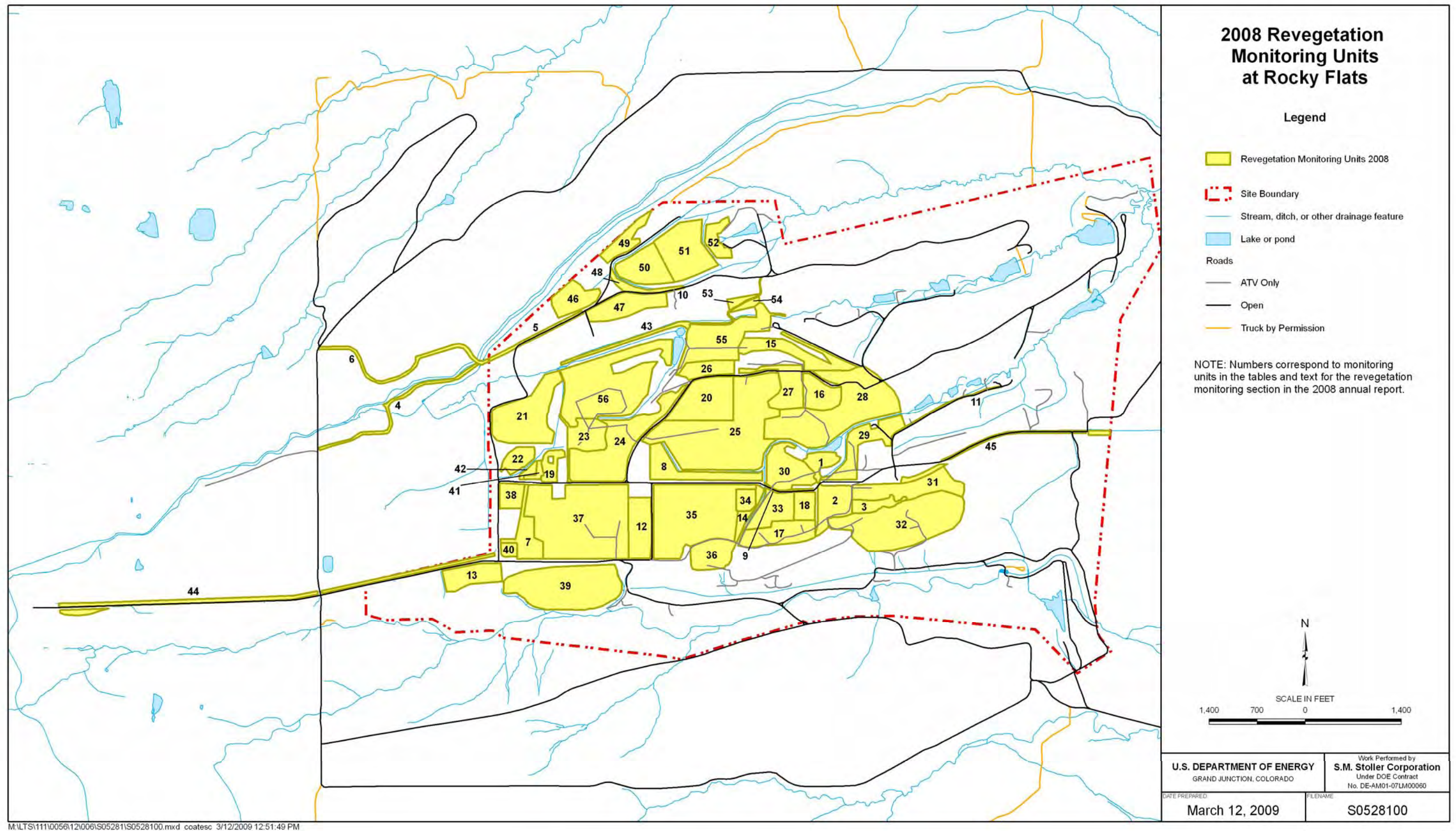


Figure 3-214. 2008 Revegetation Monitoring Units at Rocky Flats

This page intentionally left blank

inadequate or uneven initial seeding, poor soil conditions, competition from the more aggressive cool season graminoid species in the seed mix, or drought. The monitoring methodology may also contribute to the lack of seeded species present, because this measure is based solely on the species list generated from the quadrat sampling. Given the small size of the total area measured on the ground through the quadrat method, it is possible that more of the seeded species are present at the revegetation locations but are simply outside the “footprint” of the randomly located quadrats in 2008.

Table 3–101. Basal Cover Summary at Revegetation Locations 2008

| Location | Basal Vegetation Cover (%) | Litter Cover (%) | Rock Cover (%) | Total Ground Cover (%) ^a | Bare Ground (%) |
|----------|----------------------------|------------------|----------------|-------------------------------------|-----------------|
| 1 | 2.5 | 43.4 | 7.5 | 53.4 | 46.6 |
| 2 | 2.5 | 70.6 | 9.4 | 82.5 | 17.5 |
| 3 | 2.5 | 77.5 | 15.7 | 95.7 | 4.3 |
| 4 | 6.9 | 26.9 | 35.6 | 69.4 | 30.6 |
| 5 | 3.8 | 40.5 | 40.4 | 84.6 | 15.4 |
| 6 | 6.9 | 31.1 | 38.8 | 76.8 | 23.3 |
| 7 | 11.9 | 19.9 | 20.0 | 51.8 | 48.3 |
| 8 | 4.4 | 31.8 | 14.1 | 50.3 | 49.8 |
| 9 | 7.5 | 38.0 | 33.0 | 78.5 | 21.5 |
| 10 | 5.0 | 47.5 | 33.5 | 86.0 | 14.0 |
| 11 | 2.5 | 45.5 | 28.5 | 76.5 | 23.5 |
| 12 | 11.8 | 36.4 | 15.4 | 63.5 | 36.5 |
| 13 | 10.0 | 41.9 | 24.8 | 76.6 | 23.4 |
| 14 | 6.7 | 32.8 | 15.7 | 55.2 | 44.8 |
| 15 | 14.8 | 25.1 | 5.6 | 45.5 | 54.5 |
| 16 | 12.3 | 31.6 | 12.1 | 56.0 | 44.0 |
| 17 | 2.5 | 37.2 | 22.3 | 62.0 | 38.0 |
| 18 | 5.0 | 45.3 | 26.3 | 76.7 | 23.3 |
| 19 | 5.6 | 52.9 | 11.8 | 70.3 | 29.8 |
| 20 | 5.0 | 54.6 | 10.0 | 69.6 | 30.4 |
| 21 | 4.9 | 11.8 | 41.8 | 58.5 | 41.5 |
| 22 | 18.5 | 25.0 | 22.8 | 66.3 | 33.8 |
| 23 | 3.0 | 20.3 | 10.0 | 33.3 | 66.8 |
| 24 | 7.9 | 15.0 | 41.3 | 64.2 | 35.8 |
| 25 | 10.3 | 22.5 | 28.7 | 61.4 | 38.6 |
| 26 | 8.8 | 42.8 | 24.0 | 75.5 | 24.5 |
| 27 | 5.0 | 71.3 | 12.0 | 88.3 | 11.7 |
| 28 | 8.9 | 26.3 | 10.2 | 45.3 | 54.7 |
| 29 | 17.0 | 40.6 | 8.0 | 65.6 | 34.4 |
| 30 | 11.3 | 22.9 | 24.9 | 59.0 | 41.0 |
| 31 | 13.5 | 63.8 | 14.6 | 91.9 | 8.1 |
| 32 | 12.8 | 63.1 | 8.8 | 84.6 | 15.4 |
| 33 | 15.4 | 22.3 | 28.5 | 66.1 | 33.9 |
| 34 | 18.3 | 54.5 | 10.5 | 83.3 | 16.8 |
| 35 | 12.4 | 13.0 | 41.7 | 67.1 | 32.9 |
| 36 | 13.5 | 38.0 | 8.8 | 60.3 | 39.8 |

Table 3–101 (continued). Basal Cover Summary at Revegetation Locations 2008

| Location | Basal Vegetation Cover (%) | Litter Cover (%) | Rock Cover (%) | Total Ground Cover (%) ^a | Bare Ground (%) |
|------------|----------------------------|------------------|----------------|-------------------------------------|-----------------|
| 37 | 11.0 | 17.8 | 40.3 | 69.1 | 30.9 |
| 38 | 6.3 | 6.3 | 45.0 | 57.5 | 42.5 |
| 39 | 5.8 | 60.3 | 16.6 | 82.7 | 17.3 |
| 40 | 15.0 | 12.5 | 52.0 | 79.5 | 20.5 |
| 41 | 12.5 | 81.0 | 5.0 | 98.5 | 1.5 |
| 42 | 12.5 | 12.5 | 38.0 | 63.0 | 37.0 |
| 43 | 3.8 | 61.9 | 16.8 | 82.4 | 17.6 |
| 44 | 9.4 | 60.9 | 19.4 | 89.6 | 10.4 |
| 45 | 5.0 | 52.3 | 25.8 | 83.0 | 17.0 |
| 46 | 7.5 | 37.0 | 37.8 | 82.3 | 17.8 |
| 47 | 19.3 | 22.8 | 54.3 | 96.3 | 3.8 |
| 48 | 5.0 | 26.5 | 29.0 | 60.5 | 39.5 |
| 49 | 3.8 | 11.3 | 57.0 | 72.0 | 28.0 |
| 50 | 14.2 | 72.8 | 21.0 | 108.0 | 0.0 |
| 51 | 13.3 | 44.5 | 33.7 | 91.5 | 8.5 |
| 52 | 3.8 | 65.3 | 25.0 | 94.0 | 6.0 |
| 53 | 24.0 | 85.5 | 2.0 | 111.5 | 0.0 |
| 54 | 24.5 | 88.0 | 4.0 | 116.5 | 0.0 |
| 55 | 11.2 | 34.2 | 11.8 | 57.1 | 42.9 |
| 56 | 7.4 | 21.7 | 33.0 | 62.1 | 37.9 |
| Grand Mean | 9.4 | 40.3 | 23.6 | 73.4 | 27.3 |

^aNumbers greater than 100 are an artifact of the sampling method using a cover class system and midpoints for analysis.

The Total Ground Cover value is the sum of the Basal Vegetation Cover, Litter Cover, and Rock Cover.

Bare Ground Cover is a calculated value: 100% - Total Ground Cover. Negative values equal 0%.

Shaded cells mean the success criterion was met in 2008.

Ground cover protection from rock, litter, and current-year live vegetation varied from 33 percent to over 100 percent at the revegetation locations in 2008. The occasional values over 100 percent are a result of the cover class system used for estimating cover, which estimates cover values into a range and uses the midpoint of the cover class for analysis. The second success criterion outlined in the Revegetation Plan states that a minimum of 70 percent total ground cover comprising litter cover, current-year live vegetation basal cover, and rock cover is to be present to help prevent erosion. Twenty-nine of the 56 locations (52 percent) met this criterion in 2008 (Table 3–101). At most of the locations the greatest cover came from litter or rock. Currently, much of the litter category comes from the erosion control materials that are in place (i.e., erosion mats, Flexterra). In time, the dominant ground cover will be from natural litter as dead plant matter falls to the ground at the end of each growing season and builds up. Until the natural plant litter increases, however, the erosion control materials provide an artificial litter to protect the ground surface from erosion. Where overall cover was less than 70 percent, additional erosion control measures such as wattles and hay bales are in place to protect the areas and prevent erosion; or, bands of established vegetation are present between the revegetation areas and water resources.

A third success criterion outlined in the Revegetation Plan states that a minimum of 30 percent relative cover of desired species must be present, and a fourth criterion states that no single species should comprise more than 45 percent of the total relative cover. Total relative vegetation cover of desired (native) species was greater than 30 percent at 49 of the 56 locations monitored in 2008 (Table 3–101). So nearly all the locations met this criterion. Fifteen of the 56 revegetation locations (27 percent) had a single species that comprised greater than 45 percent of the relative cover (Table 3–101). Six of these locations were dominated by slender wheatgrass, one of the early successional seeded native species. In time, this short-lived perennial native species should be replaced by the other planted native graminoids. At five locations, western wheatgrass, a native seeded species, has become dominant and is outcompeting the other seeded native species. In time this may change. At three locations, 2008 was the first growing season since the revegetation had been redone. Kochia was the dominant species at these locations. It will disappear on its own once the seeded species establish and out compete it. The final location that had a single species with greater than 45 percent cover was dominated by Sheep's fescue (*Festuca ovina*). This was one of a few locations where topsoil was imported during early Site closure revegetation efforts. The seed was evidently in the topsoil that was brought in and has become dominant at this location. While it provides good ground cover, it is aggressive enough that it has out competed the native species that were seeded.

Besides kochia, other dominant species at the revegetation locations (although less than 45 percent cover) include common weedy, early successional species such as diffuse knapweed, yellow sweet clover, filaree, wild lettuce, alyssum, and Russian thistle. Most of these species will disappear on their own after a year or two as the desired seeded species out compete them for resources and begin to establish more abundantly. Weeds such as diffuse knapweed will need to be controlled through weed control efforts, which will be done as part of the normal vegetation management operations at the Site.

Overall, 13 of the 56 locations (23 percent) passed all four criteria in 2008 (Table 3–101). It is not unexpected that most failed to meet all the success criteria, as it often takes 5 or 6 years to establish a good stand of vegetation. In addition, the success criteria listed in the Revegetation Plan are an initial set of criteria established primarily for erosion protection. As stated in the Revegetation Plan, these "...criteria are provided as initial guidance; however, common sense combined with scientific data will need to be applied to final evaluations to determine whether further management actions are required at specific locations." Also, although some of the areas passed each of the criteria listed in the Revegetation Plan, this does not necessarily mean that the vegetation has established to a desirable level at these locations as of 2008. Some of the revegetation locations may require some reseeding and weed control. Proactive management of the revegetation areas is critical to success. These data are useful for making management decisions and provide documentation of the successional changes at the revegetation locations. This documentation can be used to help improve revegetation techniques at the Site.

3.3.2.5 PLF and OLF Monitoring

As part of the cleanup and closure of the Site, two landfills were covered using different types of covers. At the PLF, a RCRA Subtitle C-compliant cover was constructed to protect the underlying waste. At the OLF, a 2-foot-thick soil cover was placed over the waste material. Both areas were seeded with native plant species to provide a vegetation cover on each landfill. As part of the revegetation process, monitoring is conducted to evaluate the status of the vegetation.

This section summarizes revegetation monitoring results for data collected at the PLF and OLF during 2008. The methods and large data summary tables for the revegetation monitoring on the PLF and OLF are provided in the full report on the Ecology DVD at the end of this report. Figure 3–214 shows the locations at the Site where revegetation monitoring was conducted on the landfills in 2008. The monitoring units for the PLF were units 50, 51, and 52, and unit 39 at the OLF.

Total species richness in 2008 was 36 species at the PLF (three sampling units combined) and 30 species at the OLF. The difference in numbers between the PLF and OLF is largely related to the environmental conditions at each location. The OLF is on a south-facing hillside, where soil is much drier than soil at the PLF. One of the success criteria in the Revegetation Plan states that at least 50 percent of the seeded species must be present in an area for it to be considered successful. At the PLF and OLF, the percent of seeded species present was 80 percent (three sampling units averaged together) and 86 percent, respectively, in 2008. Thus, revegetation at both landfills met this criterion in 2008.

Ground cover protection from rock, litter, and current-year live vegetation averaged 97.8 percent and 82.7 percent, respectively, at the PLF and OLF. The Revegetation Plan states that a minimum of 70 percent total ground cover consisting of litter cover, current-year live vegetation basal cover, and rock cover is to be present to help prevent erosion. In 2008, this criterion was met at both landfills. At both locations, most of the ground cover came from litter, of which a portion is represented by the erosion controls, followed by rock and then current-year live vegetation basal cover. In time, the litter cover will continue to remain the dominant ground cover, but it will come from dead plant material that becomes matted down, rather than from the erosion controls. Both landfills have substantial protection on the soil surface to prevent erosion.

A third success criterion outlined in the Revegetation Plan states that a minimum of 30 percent relative cover of desired species must be present. At each of the individual sampling units on the PLF and OLF, the relative cover of desired species was greater than 81 percent, thus meeting this success criterion. The dominant species on the cover of the PLF in 2008 were slender wheatgrass and western wheatgrass, followed by Canada bluegrass (*Poa compressa*) on the western half and big bluestem on the eastern half. The difference between the western and eastern half is largely related to the different topsoils that were placed at each location during the construction of the cover. The western half received a “mixed” topsoil that was designed to mimic the native pediment topsoil structure, whereas the eastern half received unmixed Rocky Flats Alluvium. The finer texture on the western half is more conducive to the establishment of cool-season species that now dominate its surface, and the rocky, cobbly structure on the eastern half favors more of the warm-season, tall grass species like the big bluestem. The east face of the PLF was dominated by slender wheatgrass and western wheatgrass. Weed cover from forbs on the PLF cover was not very high in 2008 because various portions had been treated with Milestone (aminopyralid) over the past three growing seasons to keep the weeds down and allow for better establishment of the graminoids. At the OLF, the dominant species were slender wheatgrass and western wheatgrass.

A fourth success criterion outlined in the Revegetation Plan states that no single species shall comprise more than 45 percent of the total relative cover. On the PLF, the relative cover of slender wheatgrass on the west PLF area (unit 50) was 58 percent, while on the east face (unit 52), western wheatgrass had a total cover of 49 percent. Thus, only the eastern portion of

the PLF cover met this success criterion in 2008. The OLF had no single species with a cover value greater than 45 percent.

Table 3–101 contains a summary of the pass/fail criteria for each of the revegetation units at the PLF and OLF monitored in 2008. Only one of the three locations sampled on the PLF—the eastern half of the PLF cover (unit 51)—passed all four criteria in 2008. Each of the other units on the PLF had relative cover of a single species greater than 45 percent. The OLF passed all four success criteria in 2008. The fact that in 2008 the OLF met all four success criteria listed in the Revegetation Plan does not mean that the vegetation has established to a desirable level. Several areas of the OLF were disturbed during projects in 2008 and were revegetated again; these areas are starting over. Additionally, at other locations on the OLF, initial erosion controls (straw and Flexterra) were applied so thickly that it has inhibited the germination and establishment of vegetation. In fiscal year 2009, these areas will be harrowed and reseeded to try and establish a good stand of vegetation where currently only a sparse stand of vegetation exists. A good, healthy stand of vegetation is desirable on both landfills to protect the covers and provide good erosion control.

3.3.2.6 Photomonitoring Results

Photomonitoring results are presented on the Ecology DVD found at the end of the report.

3.3.3 Wildlife Monitoring

3.3.3.1 Prairie Dog Surveys

During 2008, wildlife surveys at the Site consisted of black-tailed prairie dog (*Cynomys ludovicianus*) observations. Black-tailed prairie dogs are not uncommon at the Site, typically inhabiting the lower elevation, deeper-soil areas on the eastern half of the POU and one upper-elevation surface in the northeast corner of the POU where the soils are less rocky. Several prairie dog towns have existed for many years at these locations. Prairie dog towns in the upper elevations of the COU and POU are scarce due to the abundance of rocks in the pediment soils.

From an ecological standpoint the prairie dogs are an important component of the ecosystem, providing food for raptors and coyotes, and also a source natural disturbance to the vegetation communities where the prairie dog towns are located. In recent years conflicts between people and prairie dogs have increased along the Front Range. Prairie dogs are perceived as negatively affecting recreational use and the quality of habitat on public lands. Numerous municipalities along the Front Range have instituted prairie dog relocation programs in attempts to limit outright killing of the prairie dogs. Several of these programs have resulted in prairie dogs being relocated just outside the boundaries of the POU on the eastern and northern boundaries at the Site. At some off-Site locations the increase in prairie dog populations has denuded the landscape and created bare soil areas that become sources of large dust clouds during high winds.

Concern with the prairie dog colonies at the Site is not so much ecological; rather, the primary concern is the potential for the prairie dogs to create an erosional surface by removing vegetation cover. Two landfills are present at the Site, the OLF and the PLF. The monitoring and maintenance plans for both landfills prohibit the presence of burrowing animals on the landfill covers. Additionally, infrastructure is buried at some locations in the former IA, and the prairie dogs' natural tendency to dig makes them undesirable at these locations. Thus, observations of

the locations and abundance of prairie dogs at the Site are important from a management standpoint. In 2008, the following observations were made and documented regarding the presence of prairie dogs at the Site:

- The locations of prairie dog towns within the COU and adjacent to the COU fence on POU property.
- The locations of individual prairie dogs observed in the spring when they are roaming in search of potential locations for new prairie dog holes.

Figure 3–215 shows the locations of fortuitous observations of prairie dogs roaming in spring 2008. In general, the roaming prairie dogs have been found along the roads where there is good visibility from predators. It is likely that the roads will be the pathway that prairie dogs use to get to potential new prairie dog town locations in the former IA (if that occurs). No active burrows were observed at any of the fortuitous observation locations in 2008.

Figure 3–215 also shows the locations of prairie dog towns in the COU and adjacent POU in 2008. The prairie dog towns around the perimeter of the COU have continued to expand in size over the last few years (perhaps in response to relocations off Site), but no active prairie dog holes have been found yet on either of the landfills or in the former IA.

In 2009, prairie dog monitoring will continue, and a more formal process of monitoring for animal burrows in the sensitive areas of the COU will be developed and implemented. If prairie dogs are found at Site locations where they are not permitted, appropriate measures will be taken in accordance with local regulations and in coordination and consultation with state wildlife officials.

3.3.4 Summary

The Ecology Program at the Site conducts monitoring of the ecological resources to ensure regulatory compliance and to preserve, protect, and manage those resources. Proactive management of the natural resources is critical to the long-term sustainability of the ecosystems at the Site. Noxious weeds continue to be a top priority as does the revegetation of the COU. Data from 2008 documented the continuing establishment of vegetation at revegetation locations. Noxious weed control activities and additional revegetation activities were conducted during 2008 to improve and enhance the vegetation at the Site. The monitoring results continue to provide useful information to assist in management activities. Full, detailed reports and analyses for each field monitoring effort are presented as stand-alone reports on the accompanying Ecology DVD.

3.4 RFLMA Ecological Sampling

Additional ecological sampling required under RFLMA Attachment 2, Table 5 was completed in CY 2007, and the evaluation of results is included in the *Quarterly Report of Site Surveillance and Maintenance Activities, First Quarter Calendar Year 2008* (DOE 2008e). CDPHE agreed that no further ecological sampling is required, as documented in Contact Record 2008-01 (Appendix G).